

FHWS

# iOS Programmierung (mit Swift)

Peter Braun, Florian Bachmann & Andreas Wittmann  
[@pe\\_braun](https://twitter.com/pe_braun)   [@florianbachmann](https://twitter.com/florianbachmann)   [@anwittmann](https://twitter.com/anwittmann)

Deutsche Telekom AG  
FHWS - Hochschule für angewandte Wissenschaften Würzburg-Schweinfurt  
#FHWSSwift

# Agenda

1. **Introduction** – Organisatorisches
2. **First iOS-Project** – Hello World, **First iOS-Project** – Still Hello World (now with Code 😊)
3. **Swift**, Wait!, What about Objective-C?, Why Swift?
4. **A (not so) Quick Tour**
5. **Documentation**
6. **The basics** – iOS Architecture & more
7. **User Interfaces** – View Controller, Auto Layout & Size Classes
8. **Storyboard & Segues**
9. **Tables & NavigationController**
10. **TabBarController**
11. **Notifications**
12. **PickerViews**
13. **Touches, Gestures, 3D Touch, Peek & Pop**
14. **ScrollView & StackViews**
15. **Networking** – JSON & Dependency Managers
16. **WebKit**
17. **Maps**
18. **Storage & Data persistency** – NSUserDefaults, NSKeyedArchiver & Core Data
19. **ObjC**

# First iOS-Project

## Hello World



# Welcome to Xcode

Version 6.2 (6C101)

No Recent Projects



## Get started with a playground

Explore new ideas quickly and easily.



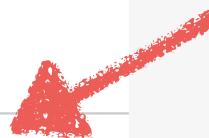
## Create a new Xcode project

Start building a new iPhone, iPad or Mac application.

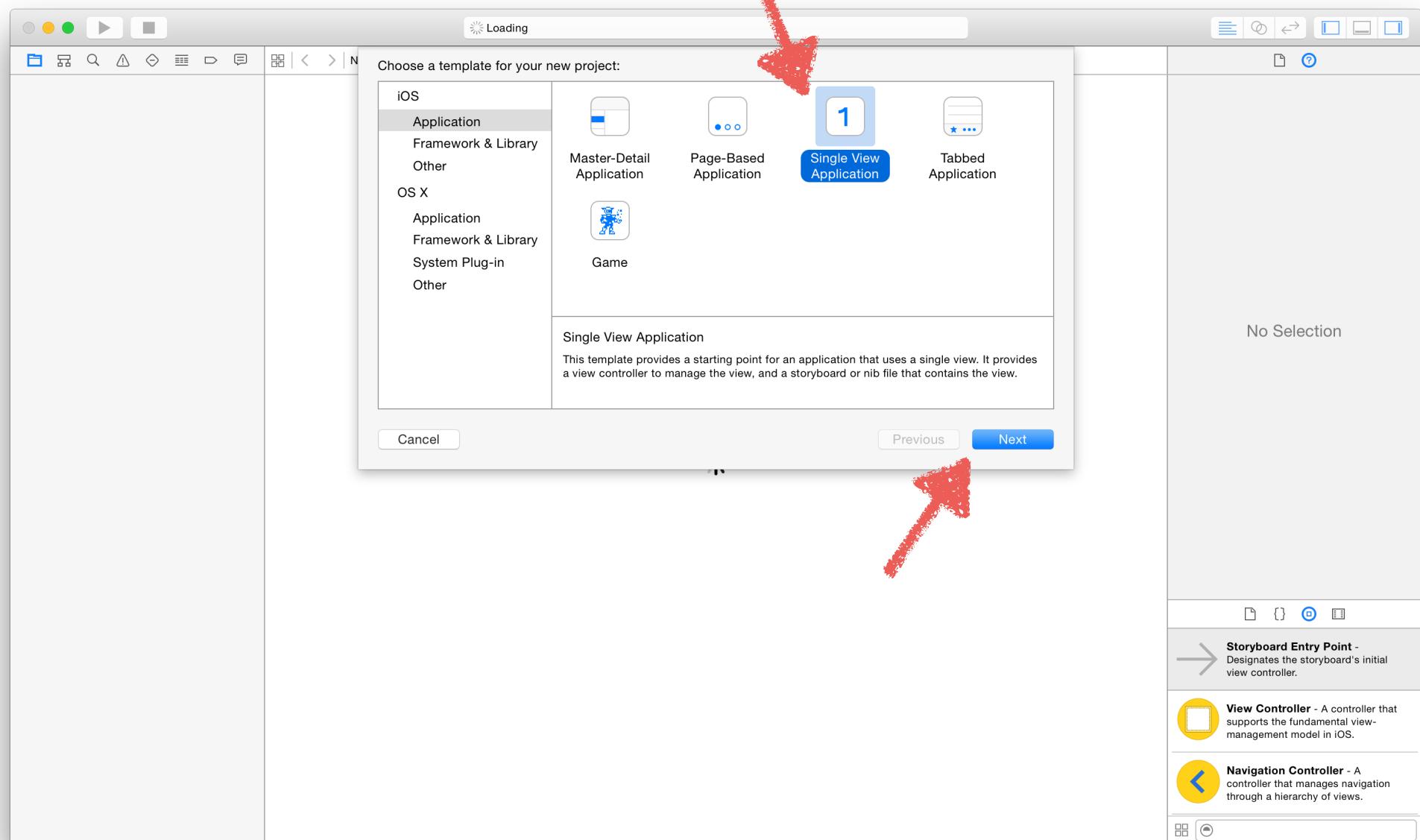


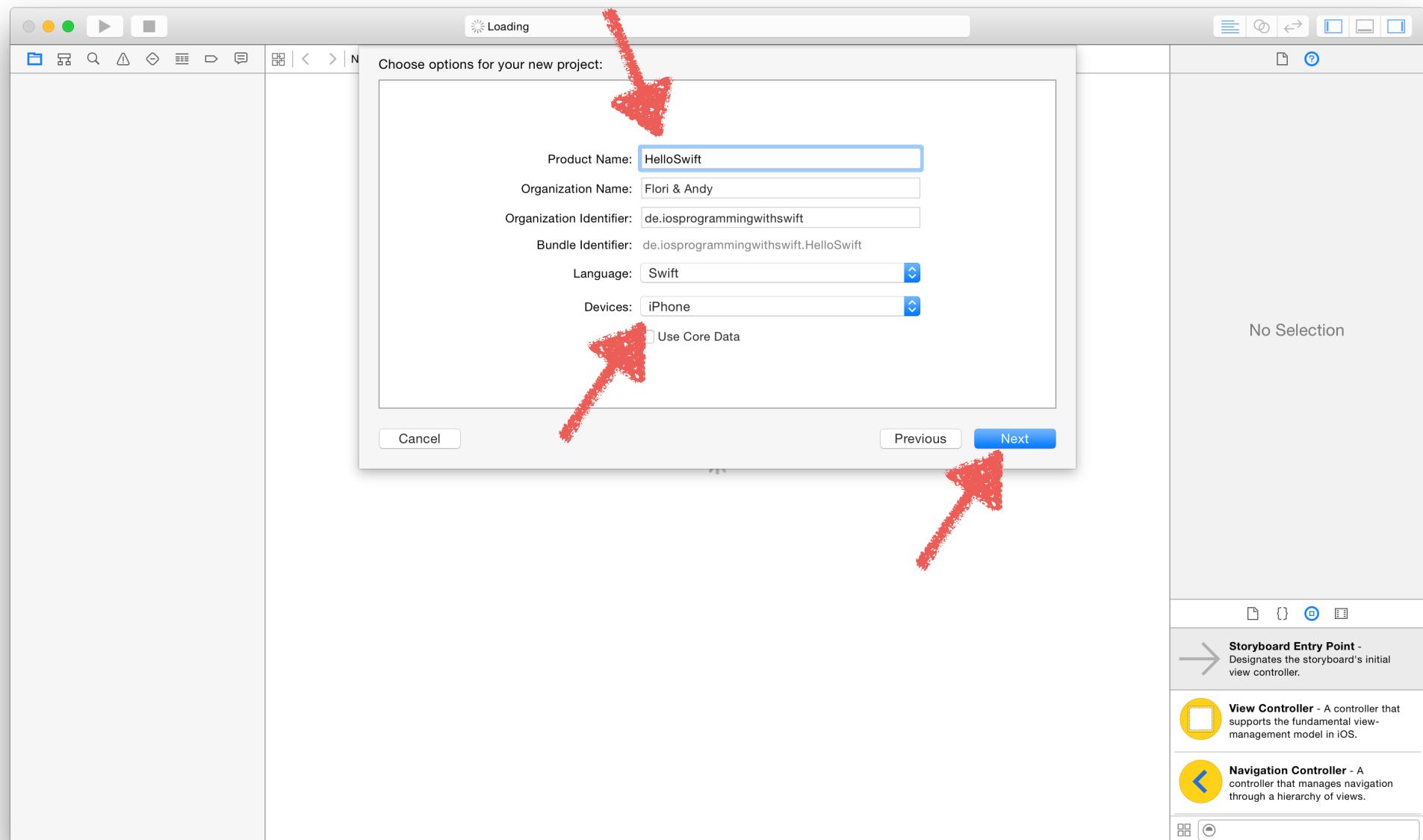
## Check out an existing project

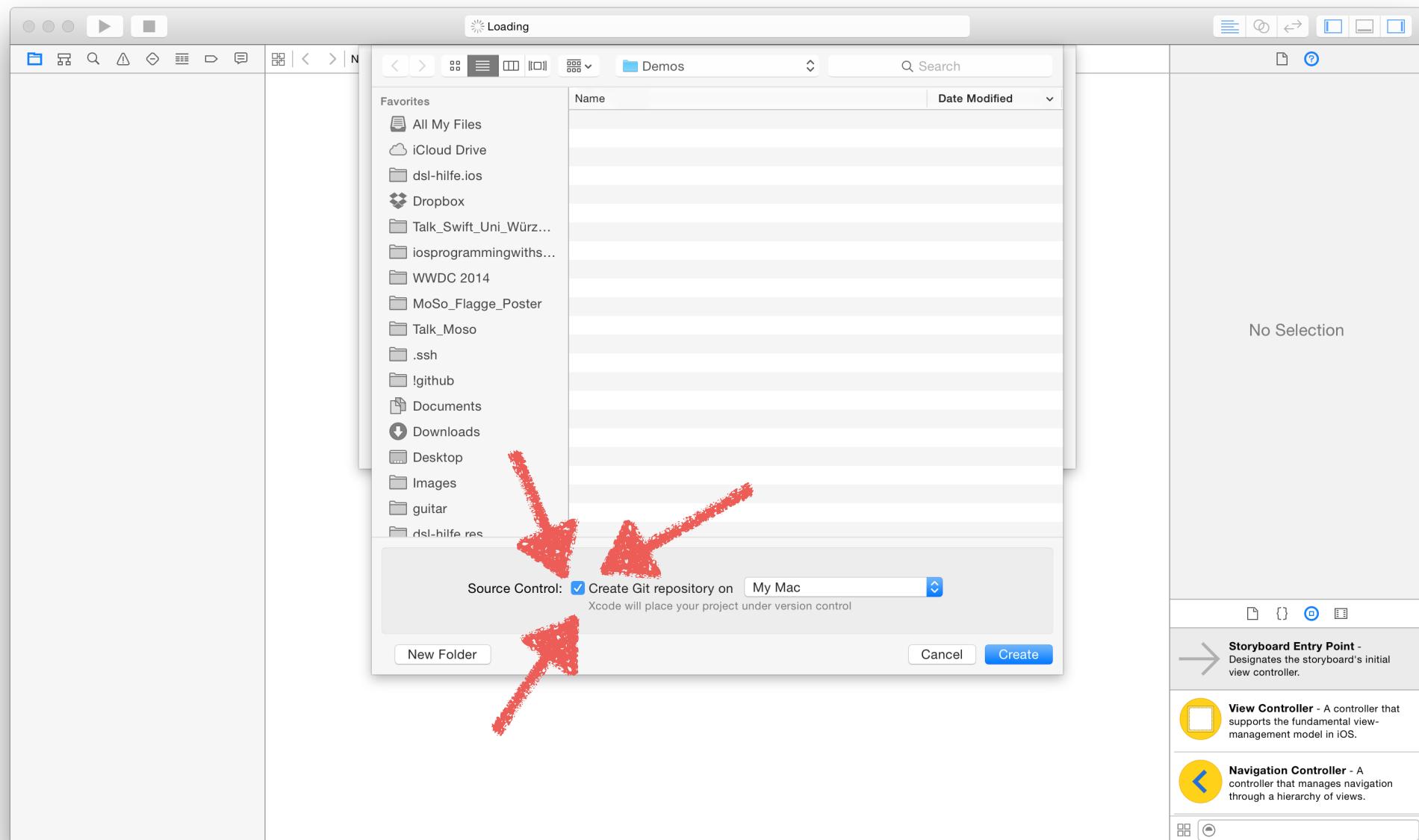
Start working on something from an SCM repository.



Open another project...







HelloSwift: Ready | Today at 23:36

PROJECT HelloSwift

TARGETS HelloSwift

Identity

Bundle Identifier: de.iosprogrammingwithswift.HelloSw

Version: 1.0

Build: 1

Team: None

Deployment Info

Deployment Target: 8.2

Devices: iPhone

Main Interface: Main

Device Orientation:  Portrait  
 Upside Down  
 Landscape Left  
 Landscape Right

Status Bar Style: Default  
 Hide status bar

App Icons and Launch Images

App Icons Source: AppIcon

Launch Images Source: Use Asset Catalog

Launch Screen File: LaunchScreen

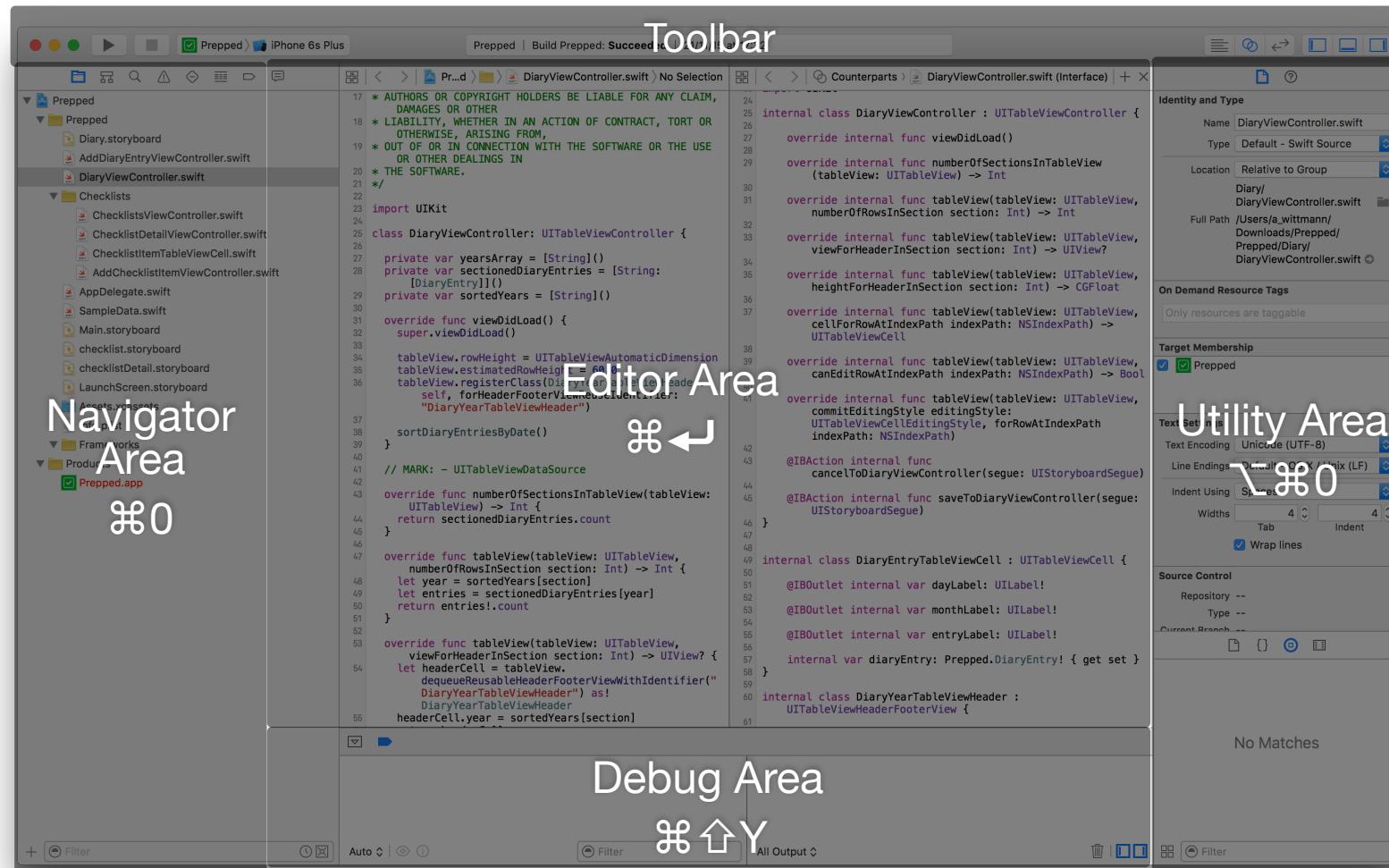
Embedded Binaries

Add embedded binaries here

Storyboard Entry Point - Designates the storyboard's initial view controller.

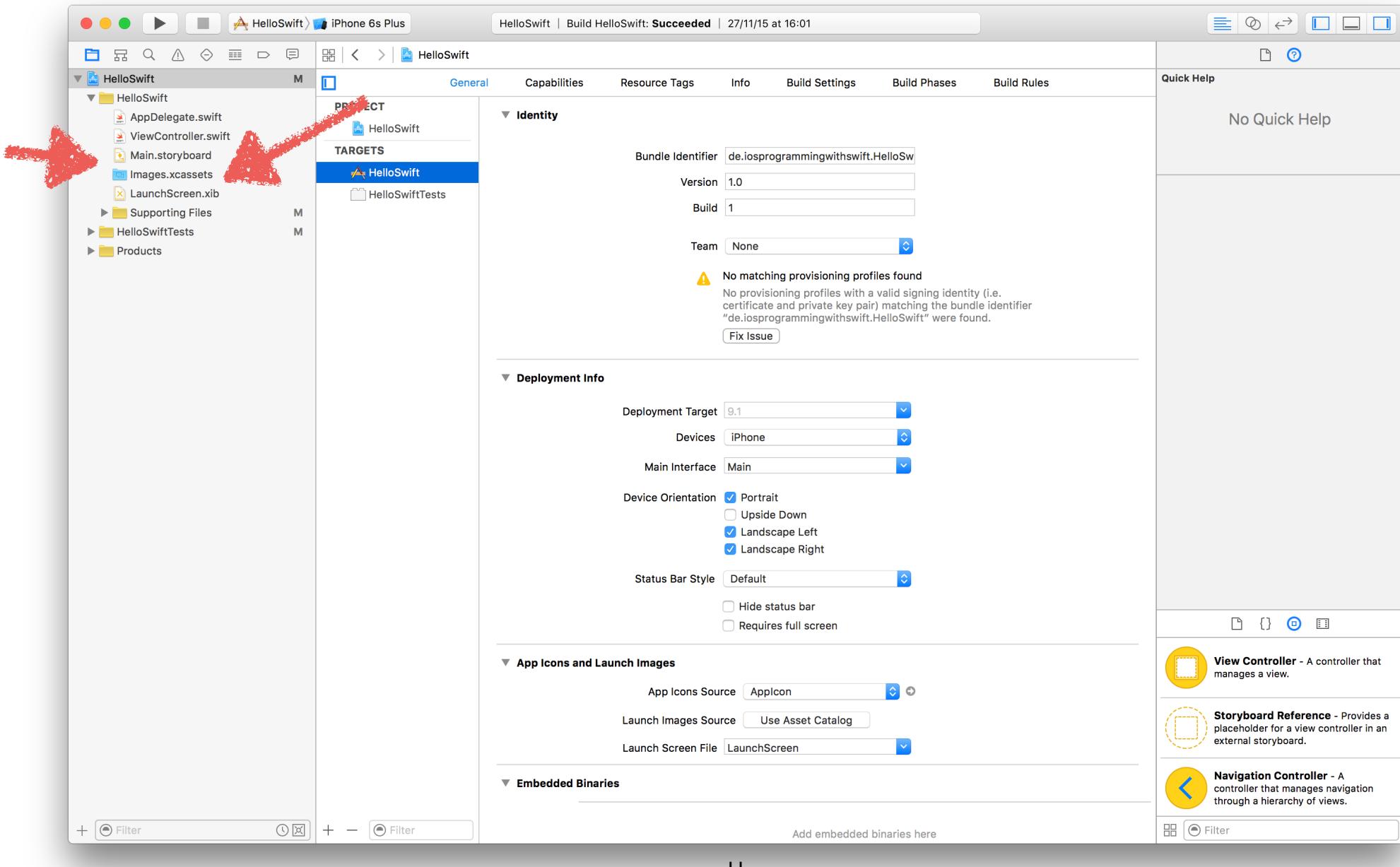
View Controller - A controller that supports the fundamental view-management model in iOS.

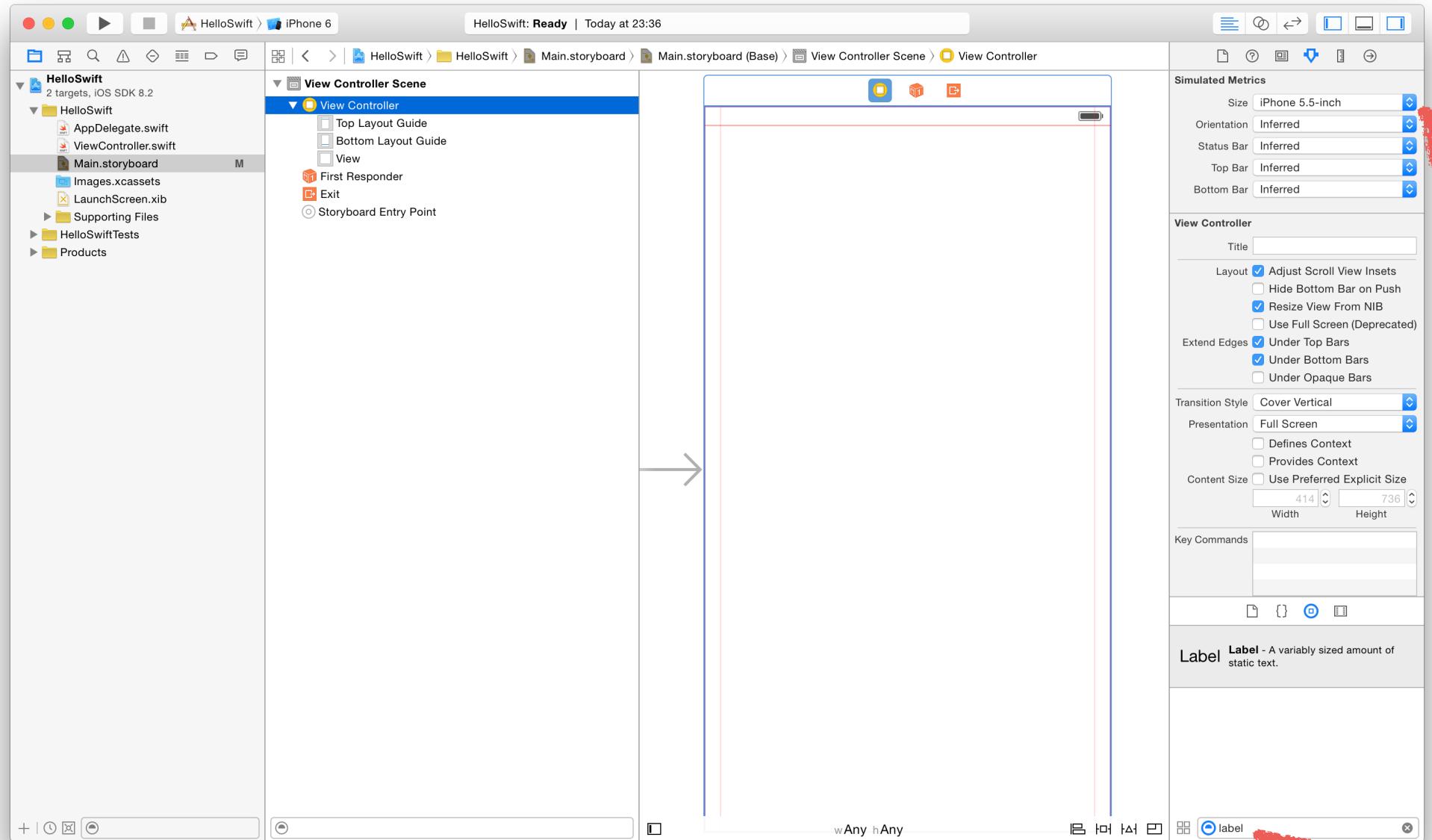
Navigation Controller - A controller that manages navigation through a hierarchy of views.

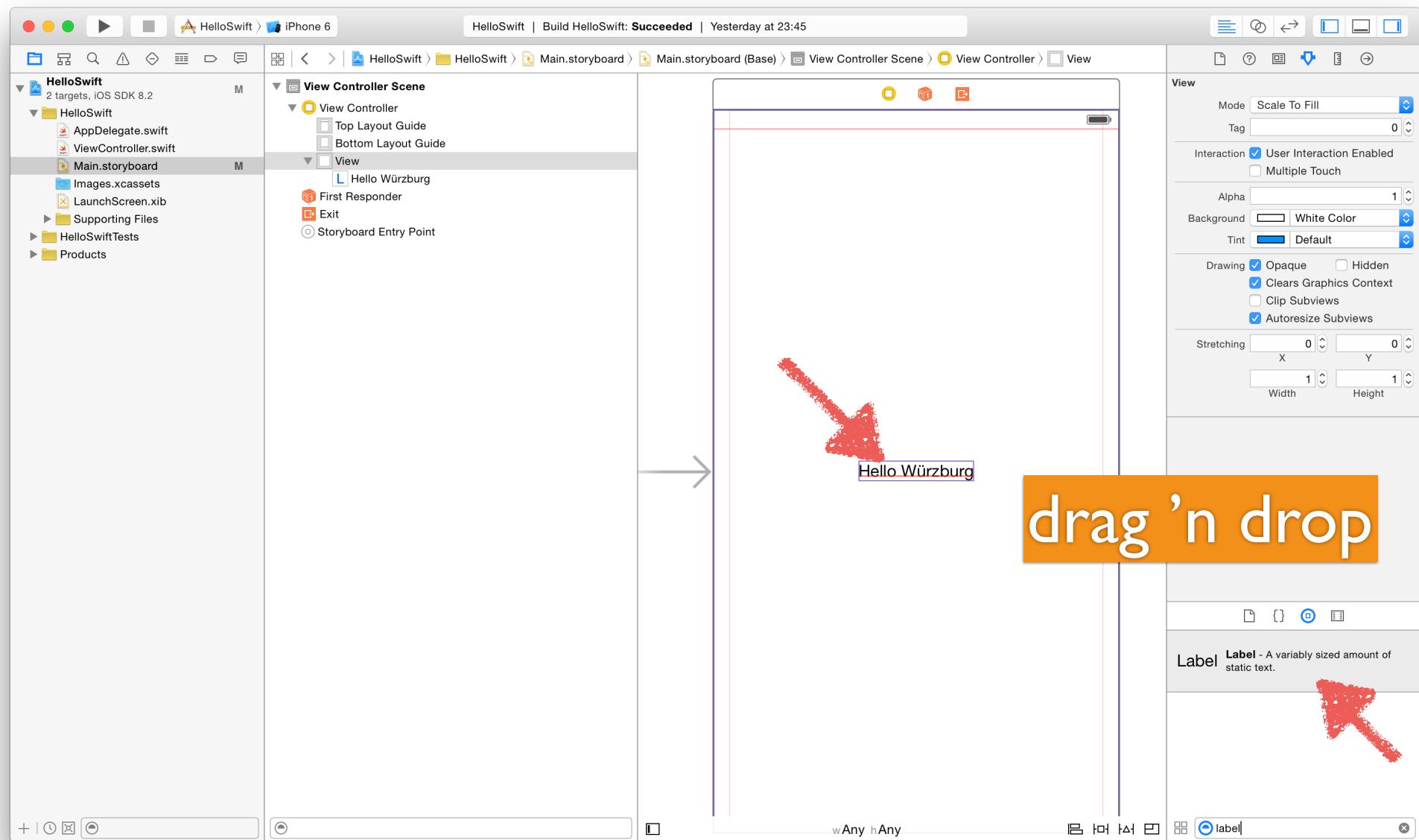


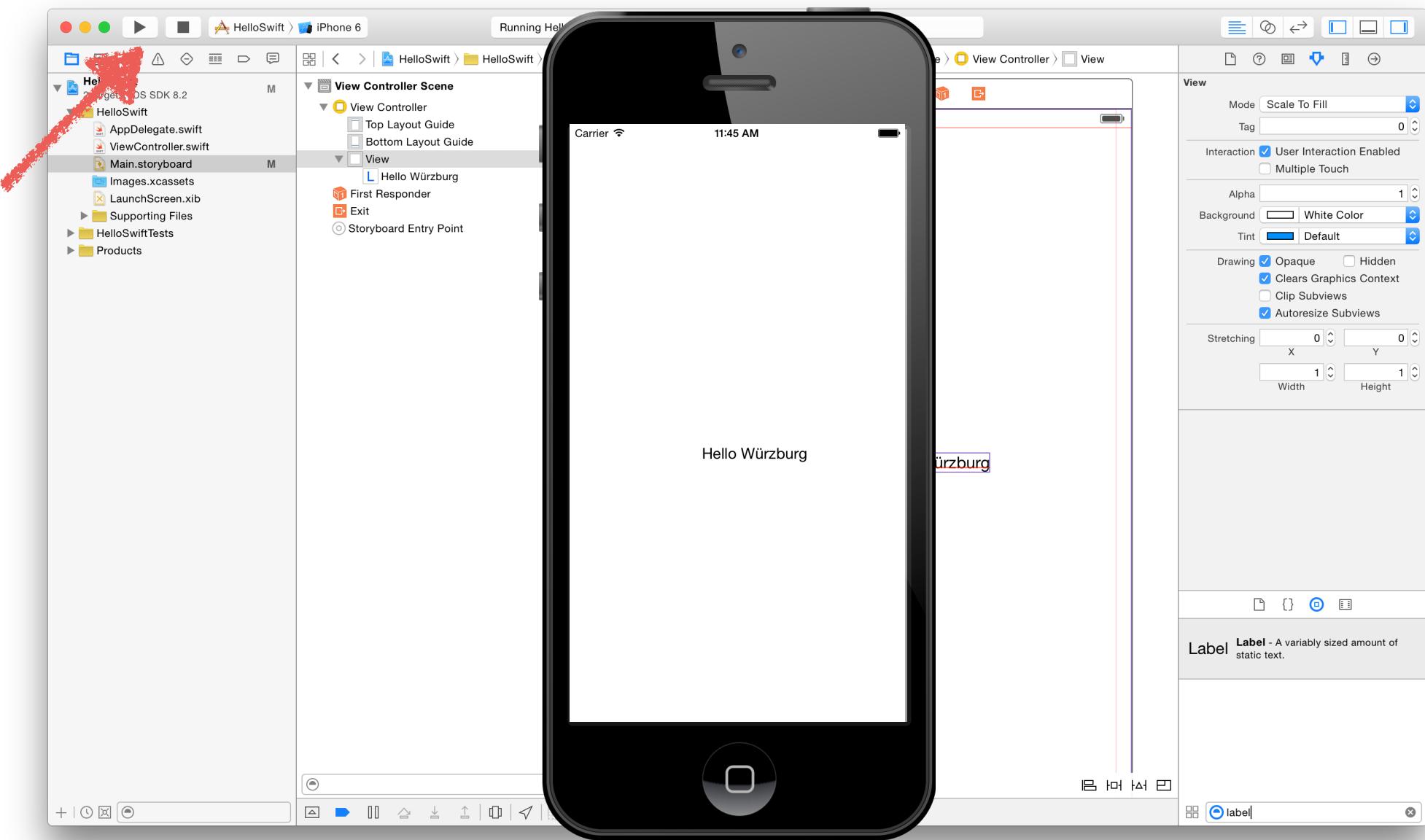
Control ⌘	Option ⌘	Shift ⌘	Command ⌘	Return ↵
<b>General</b>				
Preferences	⌘,			
Documentation	⇧⌘O			
Console	⇧⌘C			
Documentation for selected text	⌃⌘?			
Quick Help	⌘?			
<b>Code Editing</b>				
Show completions	⌃Space			
Next completion	⌃.			
Accept completion	Tab			
Next placeholder	⌃/			
Previous placeholder	⇧⌃/			
Comment selection	⌘/			
Fold method/class	⌃⌘←			
Unfold method/class	⌃⌘→			
Edit all in scope	⌃⌘E			
<b>Build &amp; Run</b>				
Build	⌘B			
Analyze	⇧⌘B			
Run	⌘R			
Profile	⌘I			
Test	⌘U			
Clean	⇧⌘K			
Clear console	⌘K			
<b>File Navigation</b>				
Go forward	⌃⌘→			
Go back	⌃⌘←			
Open quickly	⇧⌘O			
Show related items	⌃1			
<b>Debugging</b>				
Next issue	⌘`			
Previous issue	⌘"			
Fix next issue	⌃⌘`			
Fix previous issue	⌃⌘"			
Add breakpoint	⌘\\			
Activate breakpoints	⌘Y			
<b>Code Navigation</b>				
End of line	⌘→			
Beginning of line	⌘←			
Top of file	⌘↑			
Bottom of file	⌘↓			
Next word	⌃→			
Previous word	⌃←			
Next subword	⌃→			
Previous subword	⌃←			
Center selection	⌃L			
Goto line	⌘L			
Find in file	⌘F			
Find in project	⇧⌘F			
Find next	⌘G			
Find previous	⇧⌘G			
<b>Libraries</b>				
File template	⌃⌘1			
Code snippet	⌃⌘2			
Object	⌃⌘3			
Media	⌃⌘4			

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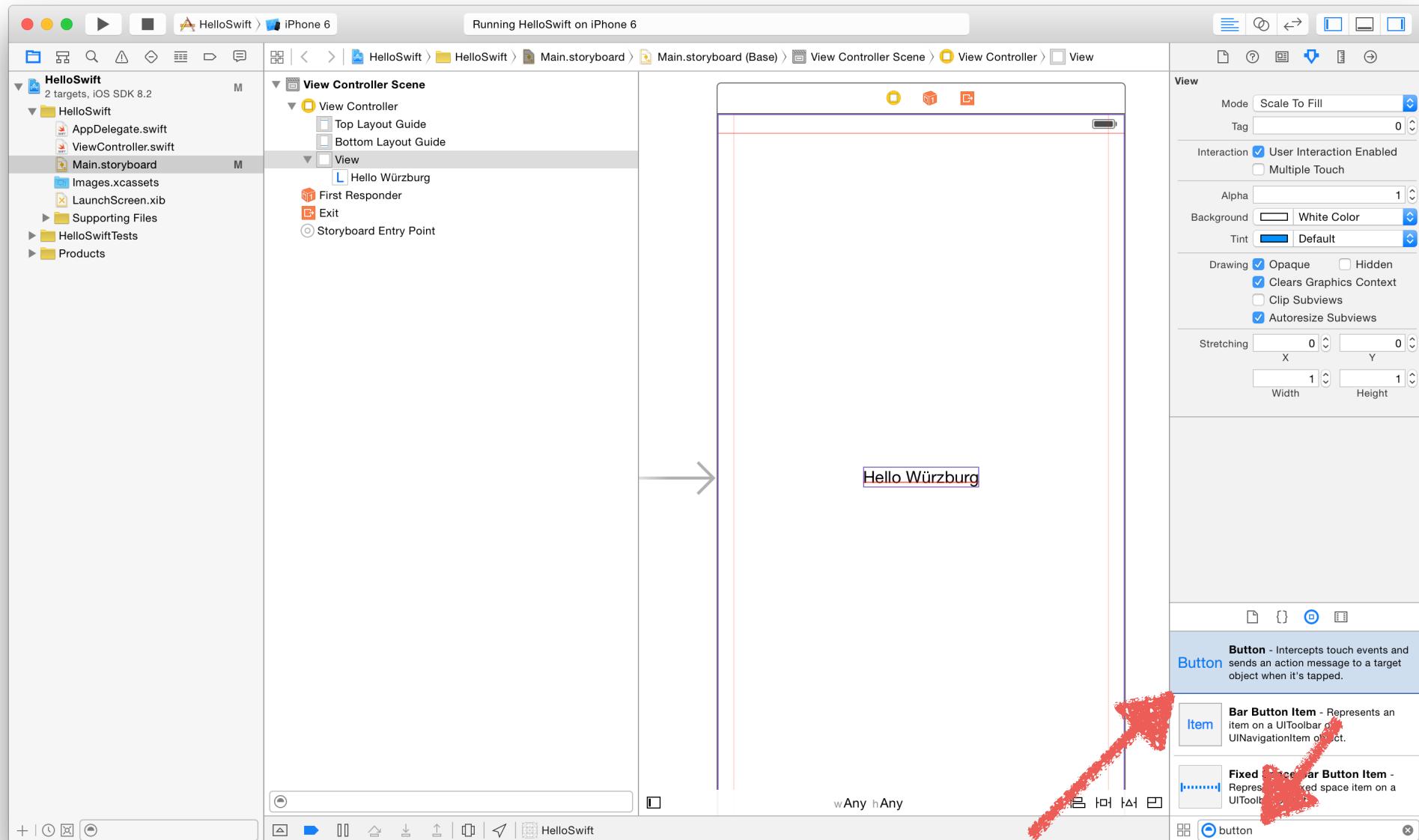


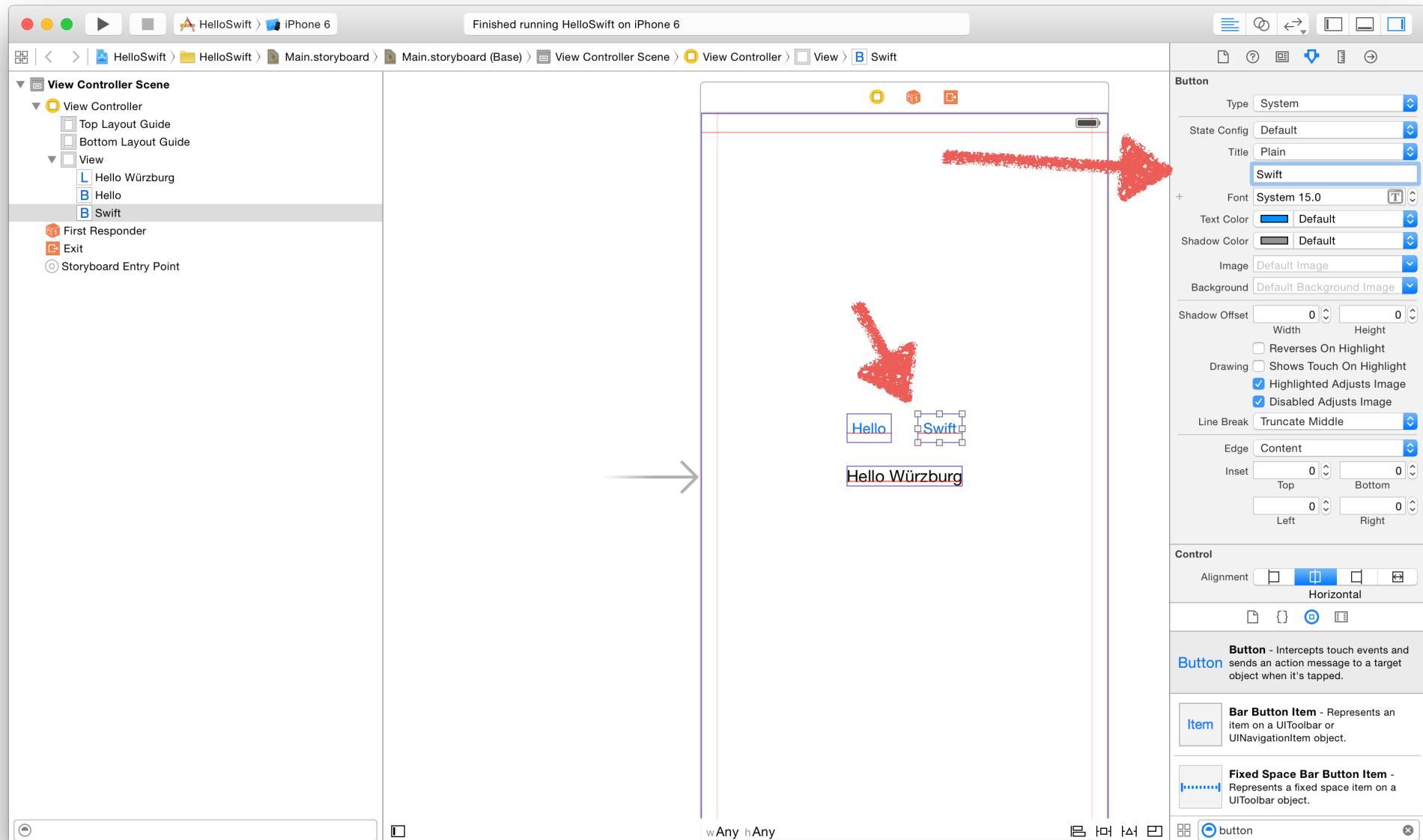
# First Swift-Project - Hello World

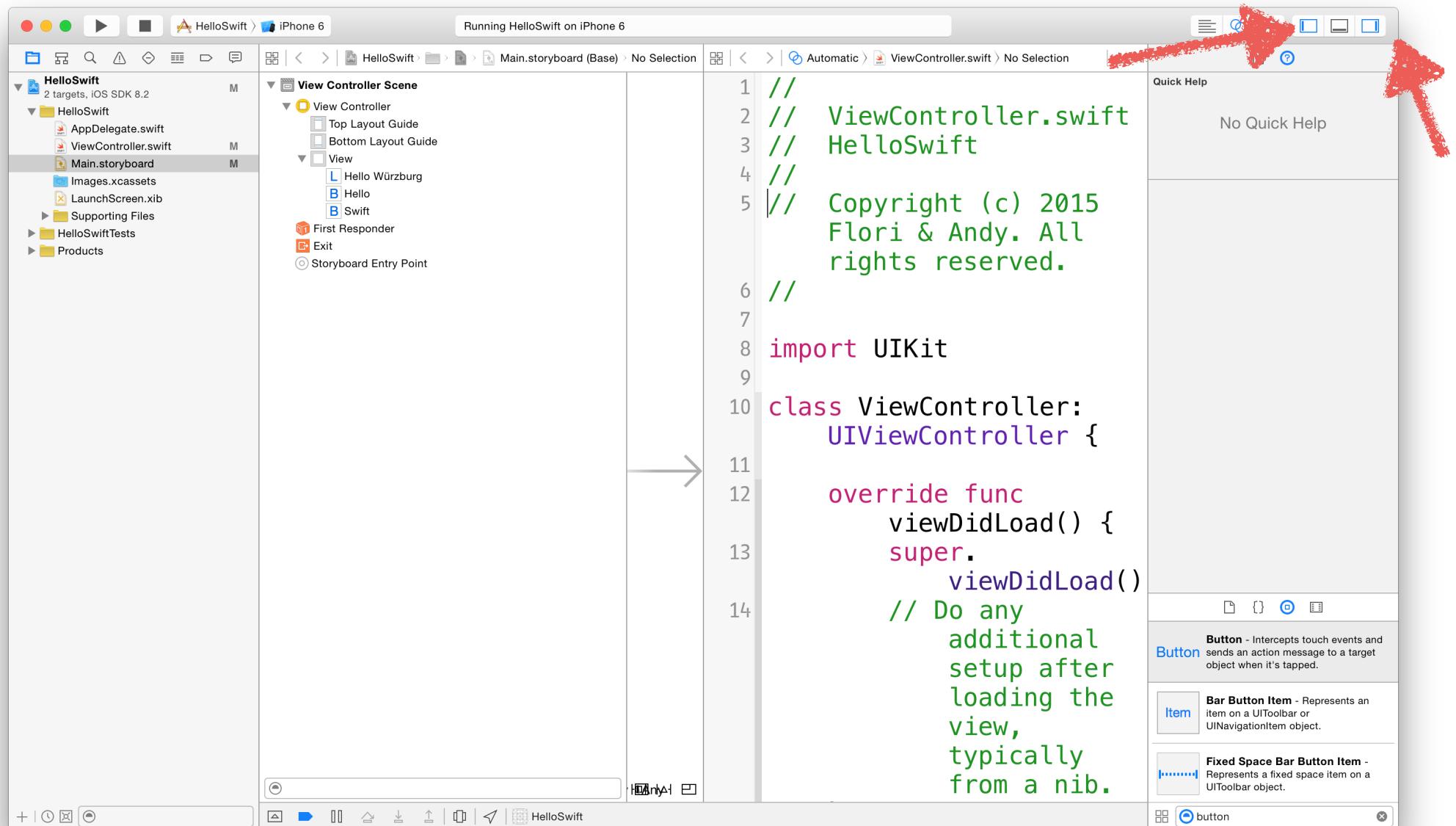
we have just seen:

- Xcode
  - Create a new Xcode project - iOS: Single View Application
- Interface Builder
- UILabel
- iOS Simulator

First iOS-Project  
Still Hello World  
(now with Swift-Code 😊)







Running HelloSwift on iPhone 6

ViewController.swift

```
// Viewcontroller.swift
// HelloSwift
//
// Copyright (c) 2015
// Flori & Andy. All
// rights reserved.

import UIKit

class ViewController: UIViewController {

    override func viewDidLoad() {
        super.viewDidLoad()
        // Do any
        // additional
        // setup after
        // loading the
        // view,
        // typically
        // from a nib.
    }
}
```

Main.storyboard

View Controller Scene

- View Controller
- View
- First Responder

Storyboard Entry Point

Quick Help

No Quick Help

Item

Fixed Space Bar Button Item

button

The screenshot shows the Xcode interface with two main panes. The left pane displays the storyboard, 'Main.storyboard (Base) > No Selection'. It contains a single view controller scene with a view hierarchy: View Controller > View > View. Inside the view, there are three labels: 'Hello Würzburg' (blue), 'Hello' (black), and 'Swift' (black). The right pane shows the code editor for 'ViewController.swift' under 'Automatic' > 'ViewController.swift' > 'No Selection'. The code is as follows:

```
// ViewController.swift
// HelloSwift
//
// Copyright (c) 2015 Flori & Andy. All rights reserved.

import UIKit

class ViewController: UIViewController {

    override func viewDidLoad() {
        super.viewDidLoad()
        // Do any additional setup after loading the view, typically from a nib.
    }

    override func didReceiveMemoryWarning() {
        super.didReceiveMemoryWarning()
        // Dispose of any resources that can be recreated.
    }
}
```

A red arrow points to the first line of the code, starting with 'override func viewDidLoad()'.

The screenshot shows the Xcode interface with a storyboard on the left and a code editor on the right.

**Storyboard (Left):**

- Project: HelloSwift (iPhone 6)
- Scene: View Controller Scene
- View Controller
- View
- Labels:
  - Hello Würzburg
  - Hello
  - Swift
- First Responder
- Exit
- Storyboard Entry Point

**Code Editor (Right):**

```
// ViewController.swift
// HelloSwift
//
// Copyright (c) 2015 Flori & Andy. All rights reserved.

import UIKit

class ViewController: UIViewController {

    override func viewDidLoad() {
        super.viewDidLoad()
        // Do any additional setup after loading the view, typically from a nib.
    }
}
```

A screenshot of the Xcode IDE. The top navigation bar shows "HelloSwift" and "iPhone 6". The status bar indicates "Finished running HelloSwift on iPhone 6".

The left side shows the "View Controller Scene" in the storyboard, containing a View Controller with a View. Inside the View, there are three labels: "Hello Würzburg" (blue), "Hello" (blue), and "Swift" (blue). The "Swift" label is highlighted.

The right side shows the "ViewController.swift" file:

```
// ViewController.swift
// HelloSwift
//
// Copyright (c) 2015 Flori & Andy. All rights reserved.

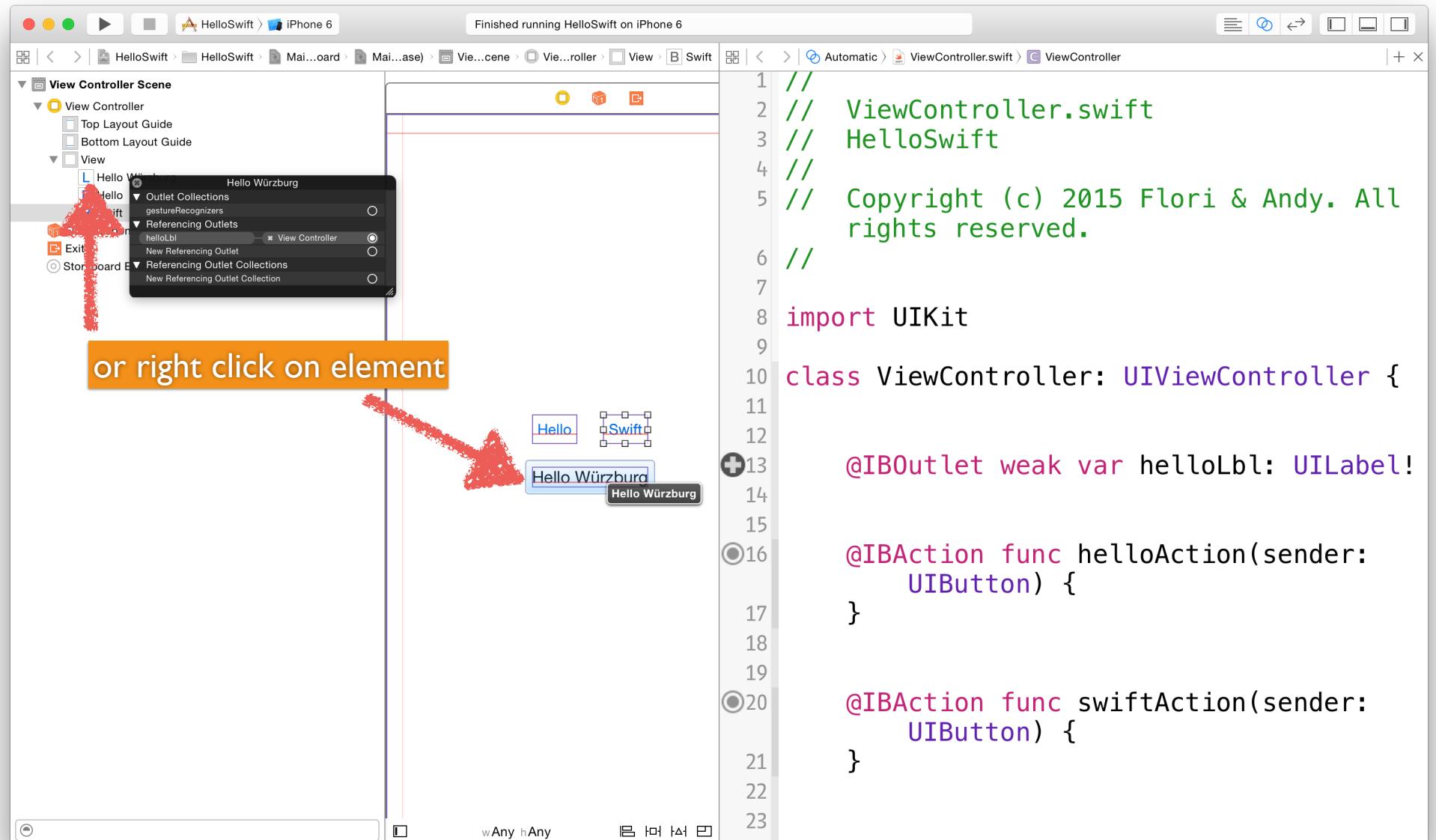
import UIKit

class ViewController: UIViewController {
    @IBOutlet weak var helloLbl: UILabel!

    @IBAction func helloAction(sender: UIButton) {
    }

    @IBAction func swiftAction(sender: UIButton) {
    }
}
```

A red arrow points from the storyboard interface to the line of code where the outlet is declared: `@IBOutlet weak var helloLbl: UILabel!`. An orange callout bubble labeled "mouse over" is positioned above the arrow, pointing towards the code.



A screenshot of the Xcode IDE. The top navigation bar shows "HelloSwift" and "iPhone 6". The status bar indicates "Finished running HelloSwift on iPhone 6".

The left side shows the "View Controller Scene" in the storyboard, containing a View Controller, View, and several UI elements: "Hello Würzburg", "Hello", and "Swift".

The right side shows the "ViewController.swift" file:

```
// ViewController.swift
// HelloSwift
//
// Copyright (c) 2015 Flori & Andy. All rights reserved.

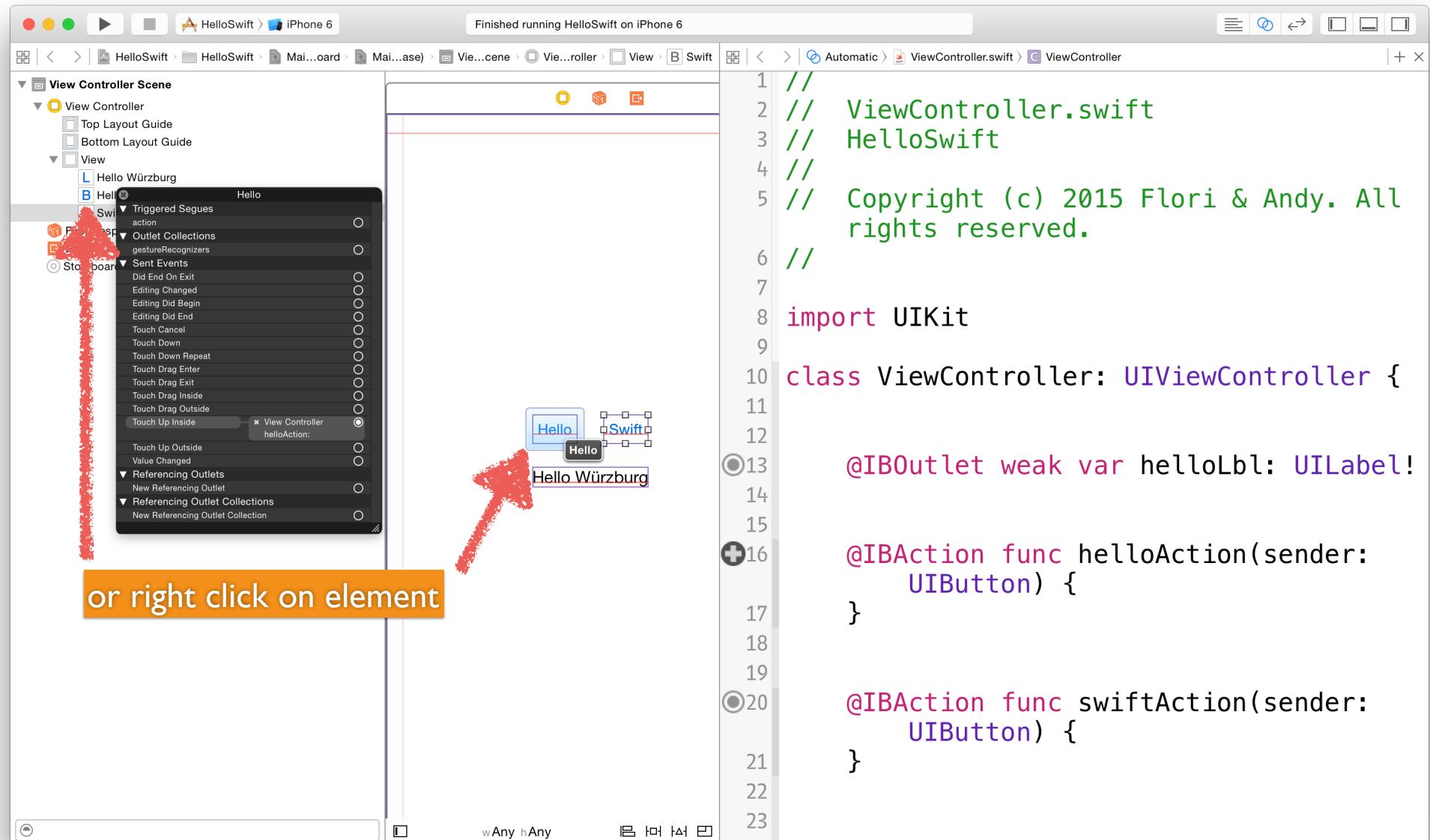
import UIKit

class ViewController: UIViewController {

    @IBOutlet var helloLbl: UILabel!
    @IBAction func helloAction(sender: UIButton) {
    }

    @IBAction func swiftAction(sender: UIButton) {
    }
}
```

A red arrow points from the storyboard's "Hello" button to the `@IBAction func helloAction(sender: UIButton)` line in the code.



A screenshot of the Xcode IDE. The top navigation bar shows "HelloSwift" and "iPhone 6". The status bar indicates "Finished running HelloSwift on iPhone 6". The left sidebar shows the "View Controller Scene" with objects like "View Controller", "View", and "Hello Würzburg". The main interface area displays a storyboard with three buttons labeled "Hello", "Swift", and "Hello Würzburg". The right side shows the "ViewController.swift" file with the following code:

```
// ViewController.swift
// HelloSwift
//
// Copyright (c) 2015 Flori & Andy. All rights reserved.

import UIKit

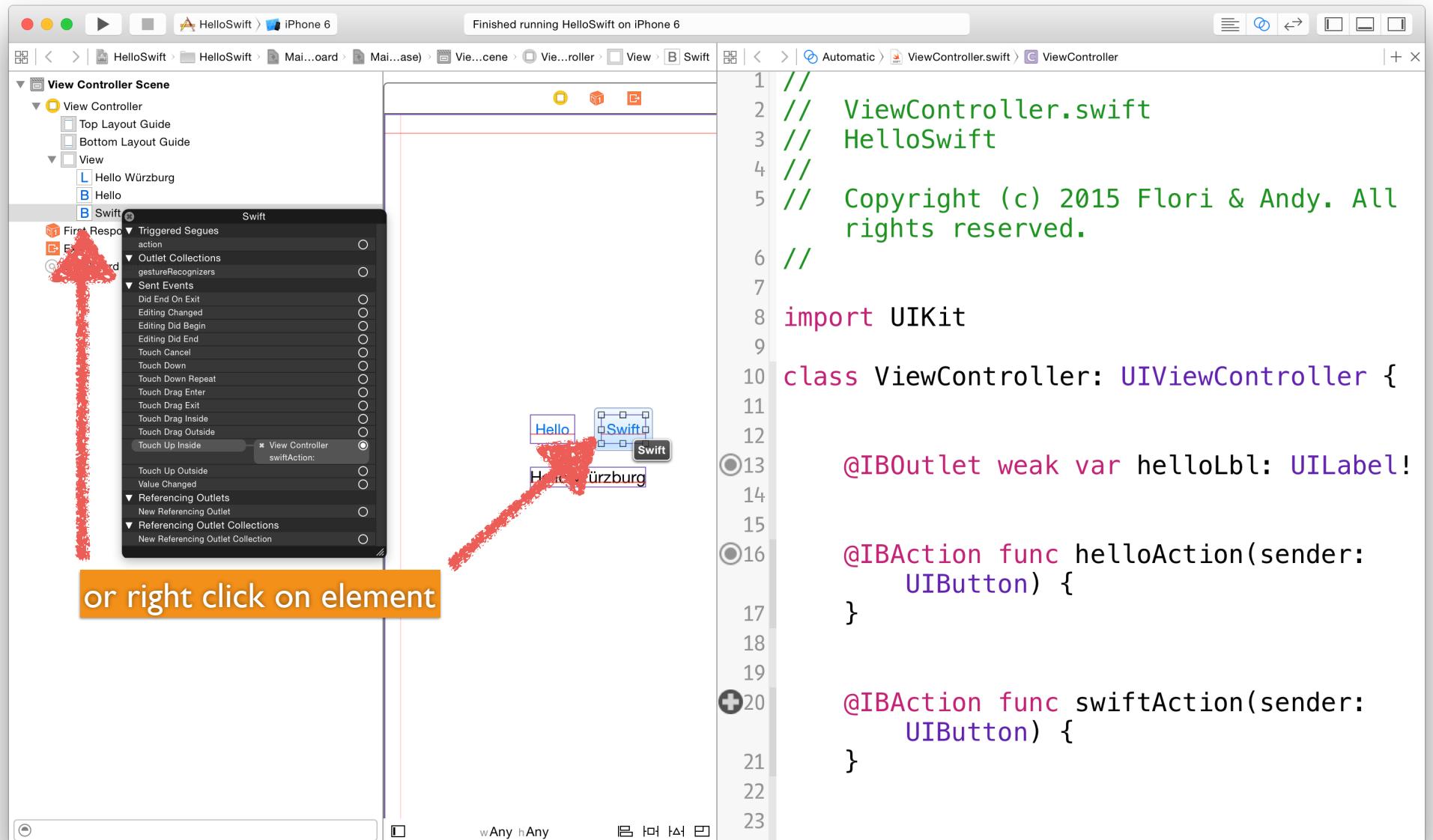
class ViewController: UIViewController {

    @IBOutlet weak var helloLbl: UILabel!

    @IBAction func helloAction(sender: UIButton) {
    }

    @IBAction func swiftAction(sender: UIButton) {
    }
}
```

A red arrow points from the "Hello" button in the storyboard to the first line of the "helloAction" method in the code. An orange box with the text "mouse over" is placed over the word "mouse" in the "mouse over" comment.



The screenshot shows the Xcode interface with a Swift file named `ViewController.swift` open. The code defines a `ViewController` class that imports `UIKit`. It contains an `@IBOutlet` variable `helloLbl` and two `@IBAction` methods: `helloAction` and `swiftAction`. A Quick Help popover is displayed, providing information about the `helloLbl` outlet. The popover includes the declaration `@IBOutlet weak var helloLbl: UILabel!`, a note that it is declared in `ViewController.swift`, and a detailed description of the `Button` class.

```
//
// ViewController.swift
// HelloSwift
//
// Copyright (c) 2015 Flori & Andy. All rights reserved.
//
import UIKit

class ViewController: UIViewController {

    @IBOutlet weak var helloLbl: UILabel!

    @IBAction func helloAction(sender: UIButton) {
        helloLbl
    }

    @IBAction func swiftAction(sender: UIButton) {
    }
}
```

Quick Help

Declaration `@IBOutlet weak var helloLbl: UILabel!`  
Declared In `ViewController.swift`

Button - Intercepts touch events and sends an action message to a target object when it's tapped.

Bar Button Item - Represents an item on a UIToolbar or UINavigationItem object.

Fixed Space Bar Button Item - Represents a fixed space item on a UIToolbar object.

button

A screenshot of the Xcode IDE interface. The top bar shows the project name "HelloSwift" and the target "iPhone 6". The status bar indicates "Finished running HelloSwift on iPhone 6". The main editor area displays Swift code for a ViewController. A code completion dropdown is open at the bottom of the screen, listing properties for a variable named "helloLbl". The properties listed are: tag (Int), text (String?), textAlignment (NSTextAlignment), textColor (UIColor!), textInputContextIdentifier (String?), textInputMode (UITextInputMode?), and textRectForBounds (CGRect). The "text" property is currently selected. To the right of the editor, a "Quick Help" panel is open, providing documentation for the "text" property of a UILabel. The documentation includes the declaration `Declaration var text: String? { get set }`, a description about replacing attributedText, and notes about nil values and iOS 8 compatibility. Below the editor, there are sections for "Button", "Bar Button Item", and "Fixed Space Bar Button Item".

```
//
//  ViewController.swift
//  HelloSwift
//
//  Created by Yury on 10/10/15.
//  Copyright © 2015 Yury. All rights reserved.
//

import UIKit

class ViewController: UIViewController {
    @IBOutlet weak var helloLbl: UILabel!
    @IBAction func swiftAction(sender: UIButton) {
    }
}

// MARK: - UILabel Properties

extension UILabel {
    var tag: Int? {
        get {
            return self.tag
        }
        set {
            self.tag = newValue
        }
    }

    var text: String? {
        get {
            return self.attributedText?.string
        }
        set {
            self.attributedText = NSAttributedString(string: newValue)
        }
    }

    var textAlignment: NSTextAlignment {
        get {
            return self.textAlignment
        }
        set {
            self.textAlignment = newValue
        }
    }

    var textColor: UIColor! {
        get {
            return self.textColor
        }
        set {
            self.textColor = newValue
        }
    }

    var textInputContextIdentifier: String? {
        get {
            return self.textContentInputContextIdentifier
        }
        set {
            self.textContentInputContextIdentifier = newValue
        }
    }

    var textInputMode: UITextInputMode? {
        get {
            return self.textContentInputMode
        }
        set {
            self.textContentInputMode = newValue
        }
    }

    var textRectForBounds: CGRect {
        get {
            return self.textRectForBounds(bounds: CGRectZero, limitedToNumberOfLines: 1)
        }
        set {
            self.textRectForBounds = newValue
        }
    }
}
```

The screenshot shows the Xcode interface with a Swift file open. The file is named `ViewController.swift` and is part of the `HelloSwift` project. The code defines a `ViewController` class that interacts with a `UILabel` outlet and two action methods: `helloAction` and `swiftAction`. The `helloAction` method changes the label's text to "Hello Würzburg". The `swiftAction` method is currently empty. The Xcode interface includes a toolbar at the top, a navigation bar, and a Quick Help sidebar on the right.

```
// ViewController.swift
// HelloSwift
//
// Copyright (c) 2015 Flori & Andy. All rights reserved.

import UIKit

class ViewController: UIViewController {

    @IBOutlet weak var helloLbl: UILabel!

    @IBAction func helloAction(sender: UIButton) {
        helloLbl.text = "Hello Würzburg"
    }

    @IBAction func swiftAction(sender: UIButton) {
    }
}
```

```
1 //  
2 //  ViewController.swift  
3 //  HelloSwift  
4 //  
5 //  Copyright (c) 2015 Flori & Andy. All rights reserved.  
6 //  
7  
8 import UIKit  
9  
10 class ViewController: UIViewController {  
11  
12  
13     @IBOutlet weak var helloLbl: UILabel!  
14  
15  
16     @IBAction func helloAction(sender: UIButton) {  
17         helloLbl.text = "Hello Würzburg"  
18     }  
19  
20  
21     @IBAction func swiftAction(sender: UIButton) {  
22         helloLbl.text = "We ❤️ Swift"  
23     }  
24  
25  
26
```

Quick Help

No Quick Help

Button - Intercepts touch events and sends an action message to a target object when it's tapped.

Item Bar Button Item - Represents an item on a UIToolbar or UINavigationItem object.

Fixed Space Bar Button Item - Represents a fixed space item on a UIToolbar object.

button

```
1 // View Controller.swift
2 // HelloSwift
3 // Copyright (c) 2015 Florin Popescu. All rights reserved.
4
5 import UIKit
6
7
8 class ViewController: UIViewController {
9
10    @IBOutlet weak var helloLbl: UILabel!
11
12    @IBAction func helloAction(sender: UIButton) {
13        helloLbl.text = "Hello Würzburg"
14    }
15
16    @IBAction func swiftAction(sender: UIButton) {
17        helloLbl.text = "We ❤️ Swift"
18    }
19
20
21 }
```

# First Swift-Project - Hello World

we have just seen:

- Xcode / Interface Builder different layouts
- UIButton
- IBOutlet
- IBAction
- Emoji ❤
- first Swift Code